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Journal of the Society of Arts.

FRIDAY, OCTOBER 3, 1856.

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CLASS-BOOKS FOR INSTITUTIONS.

It will be remembered that the Privy Council were, some time since, pleased to assent to the request made by the Society, by granting to the Institutions, where classes of an educational character were established, the privilege of purchasing books and educational apparatus at the same reduction as is afforded to schools under inspection.

The lists of elementary and school-books were then undergoing revision, which has now been completed, and the following letter has been received by the Secretary:

"Committee of Council on Education,
"Council Office, Downing-street, London,
"Sept. 30th, 1856.

"Sir,—I am directed to inform you that my Lords are now prepared to receive applications for grants of books to evening classes in union with the Society of Arts, in conformity to the regulations which have been already explained to you.

"I have the honour to be, Sir, your obedient servant,
"HARRY CHESTER.

"P. Le Neve Foster, Esq., Secretary, Society of Arts."

The conditions under which applications must be made are, that the Secretary of the Institution should, in each case, correspond directly with the Committee of Council; but with the application he should file a certificate from the Secretary of the Society of Arts, stating that the Institution is in union with the Society of Arts, and that the Council of the Society recommends its application, it being understood that no classes will be recommended to the Committee of Council except those in which regular instruction is the characteristic feature; that the class will be open to the visits of her Majesty's Inspectors; that, if scientific apparatus be applied for, a competent lecturer will be engaged, *i.e.*, that the class will not depend for its scientific instruction upon itinerant lecturers alone; lastly, that the premises and furniture will be reasonably convenient for the purpose.

Further particulars, with reference to the mode of application, will be published as soon as the necessary forms have been received from the Privy Council Office.

SUBJECTS FOR PREMIUMS.

The Council, in issuing the subjoined List of desiderata, would urge upon the Members of the Society generally, and others, the importance of communicating detailed accounts of new processes in the Arts or methods of Manufacture, of any new Mechanical arrangement by which these may be simplified, or labour saved, and of any novel application of Raw Materials, whether previously known or not, to useful purposes. It is quite possible that some of the things here set down as to be done, may have been already accomplished; but in such cases the knowledge of them is limited, the facts not having been made public. It is the object of this Society to evoke discussion on the subjects with which it deals, to see that nothing is concealed which may in any way tend to promote the good of all, and to record the facts and opinions thus elicited. The weekly meetings, and the *Journal of the Society of Arts*, afford the requisite facilities for effecting this, and the Council earnestly hope that the opportunities thus given may be taken advantage of.

Classes I. to IV.*—Raw Materials.

1. For an account of the Raw Materials obtainable from different parts of the world, that are *not yet* generally introduced into Commerce.
2. For an account of the mode of occurrence, and of the uses of Cornish, Devonshire and Dorsetshire Clays, the quantities annually worked, used in English potteries and exported.
3. For an account of the Stones used in manufacturing processes, such as Millstones, Grindstones, Hones, &c., their sources of supply, and the methods of cutting and preparing them for the market; also of the purposes to which they are applied, and of the artificial substitutes that have been introduced, and found available.
4. For an account of the different Natural Stones, whether limestones or sandstones, used for architectural purposes in the different large towns in the United Kingdom, stating the comparative durability, price, special use, and general statistics of each.
5. For an account of the materials used as Slates, Slabs, and Flags, in the principal towns in the United Kingdom, with information as to their durability, cost, chief use, and general statistics.
6. For an account of Road Material of different kinds, and the absolute and relative value of each.
7. For an account of the methods at present in use in the various coal-mining districts for ventilating and lighting the mines, with suggestions for their improvement.
8. For an account of the various commercial Copper Ores, of the smelting processes, and the methods by which the precious metals can be separated from Copper.
9. For an account of the treatment of Tin, and its application to the Arts and Manufactures, and of recent discoveries of new sources of supply.
10. For an account of the modes by which *Wolfram* can be separated from other ores; and of the uses of Tungsten in the Arts.
11. For any new application of Tungsten in the Arts.
12. For an account of Menaccanite or Iserine, and suggestions for obtaining Titanium from these ores.
13. For an account of the processes now in use for Smelting Zinc Ores, with suggestions for their improvement.
14. For an essay on the means at present in use for preserving Iron from the injurious action of water or exposure to the atmosphere; how far they are efficient as a means of preserving that material when used in connection with the Arts, in the construction of ships, or for engineering purposes.
15. For any improvement in the process of condensing the Fumes in the Smelting of Lead Slags.
16. For the best account of the production of Sulphur and Arsenic from the metalliferous ores of the United Kingdom, with statistics of the use and export of these substances.
17. For the discovery in England, or the importation from any of the British possessions, of Plumbago, or of some other substance which may be used in lieu thereof, equal in quality to that obtained from Cumberland.

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* The classification of this list is that adopted at the Great Exhibition of 1851.

18. For an account of Mineral Veins in the various Mining Districts in the British Islands, with particular reference to the differences that exist between Copper and Lead lodes, and the relations of Copper with Tin, and of Silver and Zinc with Lead.
19. For an account of the methods now in use for separating Silver from Lead Ores, with suggestions for their improvement.
20. For an account of the best proportions of metals used in the production of the compound metal Bronze, and the preparation of Bronze Washes.
21. For the invention of a White Metallic Alloy which may be successfully applied in the Arts, free from microscopic faults, hard enough for use in reflecting telescopes, and not liable to be acted upon by the atmosphere.
22. For the discovery or manufacture of a new Smokeless Fuel, which shall not occupy more space, or be of greater weight than the fuel now in use; and shall be equal in the amount of heating power, without liability to injure metals in contact with it.
23. For an account of new sources of supply of Silk Cocoons and of the best modes of packing and importing them, with a view of their being reeled in England.
24. For the production of Cyanogen by a method applicable to the fabrication of Cyanogen Compounds employed in the Arts, and better than that now adopted.
25. For the production of Ammonia or Nitric Acid from their elements, by methods which would admit of practical application.
26. For the best collection of foreign Dyeing or Colouring Substances, distinguishing those at present used from those generally unknown to Commerce.
27. For an account of the processes at present employed for the extraction of Dyes and Colouring Matters from animal, vegetable, and mineral substances.
28. For an account of the principal Dyes and Dye Stuffs at present employed in the woollen and silk trades, their sources of supply and modes of application.
29. For the production of a good and permanent Purple or Violet Dye for silk and other fabrics.
30. For an account of the principal Dyes and Dye Stuffs at present employed in the cotton trade, their sources of supply and modes of application.
31. For an account of the present means used in different countries for Dyeing Turkey Red, having special reference to the new methods for hastening the process.
32. For a means of fixing the Carmine Colour of the fruit of the Cactus Opuntia.
33. For the production from coal of Colouring or Dyeing Materials, capable of being used economically as substitutes for indigo or madder.
34. For the discovery of a practical process for converting the refuse Naphthaline of Gas Works into Alizarine or Madder red.
35. For an account of the processes employed in obtaining different products, as Paraffine, from Shale, and the uses to which they may be applied.
36. For the discovery in England of a bed or beds of pure White Sand, suited to the manufacture of Glass, and possessing similar properties to the French sands used in the same manufacture.
37. For the production of Glass by the use of the constituents of which the French sands are composed, such Glass to be of a quality equal to that produced from those sands.
38. For an economical and efficient method of producing Designs on Stained Glass for windows and ornamental purposes, by which the cost of production shall be reduced, and the use of lead frames rendered unnecessary.
39. For an account of the Chemical Manufactures of Newcastle-upon-Tyne.
40. For an account of the various materials, White Lead, White Zinc, and Carbonate of Barytes, used in the manufacture of white paint, and the advantages and disadvantages of each.
41. For an account of the economical manufacture of Oxide of Zinc, and its incorporation with colours, so as to render them not liable to be acted upon by sulphurous gases, or to fade on exposure to light and heat.
42. For the preparation of any Colour, applicable to the japanned surfaces of Papier Maché, that shall be free from the brightness (or glare) of the varnished colours now used, but yet possess the same degree of hardness and durability.
43. For the best specimen of English-made Artificial Ultramarine, together with an account of the method of manufacturing it, with suggestions for the extension of its production in this country.
44. For the production of a Prussian Blue which either on cotton or separate, shall not be attacked by soap, or moderately dilute caustic alkalies, in the cold.
45. For the preparation of light colours to be used in Enamelling or Japanning Slate or Iron, that will stand the action of heat from the fire without blistering or discoloration, and be sufficiently hard to resist scratches.
46. For an account of the processes involved in the preparation of Animal Charcoal, and its application to manufacturing and other purposes.
47. For the production of Charcoal from Wood, capable of being used as an economical and efficient substitute for animal charcoal in the manufacturing processes where the latter is at present used.
48. For the best means of Utilizing Refuse Ores, refuse Coal, and impure approximations to coal.
49. For the best means of utilizing the Clinkers produced in the furnaces of steam engines, with an account of the products obtained, and the purposes to which they may be applied.
50. For an account of the manufacture of Gas, with suggestions for increasing its purity and utilizing the refuse products of gas-works.
51. For a cheap substitute for Pitch, Tar, &c., equally impervious to air and moisture, but non-inflammable.
52. For the best collection of Tanning Substances, distinguishing those at present used from those generally unknown to Commerce.
53. For an account of the materials and methods at present employed in preparing and dressing Skins; the colours and treatments to which they are submitted in dyeing, and the machinery and processes used in embossing or producing ornamental surfaces in Leather.
54. For an account of the sources of supply of Furs, and of the methods of preparing, dressing, and dyeing them for the market.
55. For the discovery and development of any new and economical source of supply of Hair of a fine quality, suitable for manufacture.
56. For the best substitute for Horsehair, for stuffing cushions, mattresses, &c.
57. For an account of the best methods of growing and preparing Flax, with a comparison of natural and artificial modes of steeping.
58. For an account of the methods at present employed for the extraction of Oil from Seeds, and the useful application of the cake, or marc, as food, manure, &c.
59. For an account of the sources of supply and processes of manufacture of the various Lubricants employed in working machinery and rolling stock.
60. For an account of the Spices of Commerce, with suggestions in reference to new sources of supply.
61. For an account of the Drugs of Commerce, with suggestions in reference to new sources of supply.

62. For the importation from Australia, New South Wales, Van Diemen's Land, or Cape Colony, of not less than fifty pounds of Dried or Preserved Fruits, of good marketable quality.
63. For an account of the various grain and pulse crops grown in India, classifying them under their several local and botanical names, and specifying their culture, yield, uses, and prices.
64. For an account of those Palms and similar trees which yield meal, saccharine and other juices, fibres, edible fruits, &c., with a statement of the cost and commercial value of their products.
65. For the best collection of farinaceous substances imported from the Colonies, such as meal, biscuits, cassava cakes, &c., obtained from roots, seeds, or fruits.
66. For the importation of tropical fruits, such as the pine, banana, mango, &c., preserved in the form of marmalade, jam, jelly, or in combination with farinaceous substances, biscuits, &c.
67. For an account of the pressed, dried, and other preparations of Fish, forming articles of commerce in the Eastern Seas, including the Tripang, or Bêche-de-mer, Balachong, Tamarind fish, Sharks' fins, fish maws, dried shrimps, &c.
68. For an account of any useful purposes to which the Eggs and Feathers of Sea-Fowl and the Scales of Fish may be applied.
69. For the best essay on the theory and practice of fermentation, particularly as applied to the art of brewing, so as to modify, or altogether dispense with, the intermediate process of malting.
70. For a substitute for, or preparation of, Yeast or ferment for raising bread and other purposes, which may be preserved for use, better than any hitherto generally known.
71. For an account of the processes employed in the manufacture of Starch, the sources from whence it is obtained, and the purposes to which it is applied.
72. For the largest and best sample of Starch, produced from a non-edible substance, cheaper than any at present in use, and obtainable in large quantities.
73. For improvements in the processes for Preserving Animal Food, with an account of the methods at present employed.
74. For the best and most economical means of applying Carbonic Acid Gas to the preservation of Meat.
75. For the discovery and production of any new substance which can be successfully used as a substitute for Gutta Percha.
76. For an account of the best Transparent Colours, and the mode of applying them to paint Marble Statues.

(*To be continued.*)

METHYLATED SPIRIT.

(*Concluded from page* 717.)

"3. Spirit of wine is used as an ingredient for the production of ether, chloroform, sweet spirit of nitre, and fulminating mercury. These are important articles of manufacture, the first three articles being valuable medicinal agents, and the last-named being used for making percussion caps for fire-arms. Ether and chloroform are also made use of on account of their solvent power, especially the former. Sweet spirit of nitre is used exclusively in medicine, but being a popular remedy the quantity used is very considerable. We may state with reference to this article, that it is made by distilling a mixture of spirit of wine and nitric acid, and that when properly prepared it consists of a solution of a small quantity of nitrous ether in spirit of wine. The proportion of nitrous ether present is extremely variable, and in some commercial samples is so small as merely to impart a slight flavour to the spirit; which flavour, moreover, is by no means disagreeable. From information derived from those practically acquainted with the commerce of this article, it may be inferred that a large proportion of the sweet spirit of nitre now used is made from illicit spirit, the price at which the wholesale dealer can purchase sweet spirit of nitre being less than that at which it can be produced with spirit on which the duty has been paid. It is scarcely to be expected that spirit which has been rendered permanently unpotable can be used for making sweet spirit of nitre, as the peculiar and unobjectionable flavour of that compound is the popular test of its good quality. When made with the methylated spirit, the compound acquires a disagreeable flavour, which is more especially developed on diluting it with water; and it is impossible to recover the alcohol again in a pure state from such sweet spirit of nitre. On the other hand, the separation of pure alcohol from good potable sweet spirit of nitre, such as the public are accustomed to use and require, is attended with no difficulty. It appears improbable, therefore, that any regulations could be devised for the preparation of sweet spirit of nitre from duty-free spirit, which could be adopted with safety to the revenue.

"Ether and chloroform may be made with the methylated spirit, and when the products have been purified in the usual way, they do not appear, upon a superficial examination, to differ from those made with pure spirit. Upon allowing them slowly to evaporate, however, a peculiar and disagreeable odour becomes perceptible, towards the end of the evaporation. This impurity would probably preclude their application for most medicinal purposes, for which they are required to be pure, or at least to be free from any foreign flavour either in taste or smell. When used as solvents, the same degree of purity is not generally essential, and we believe that ether and chloroform produced from the mixed spirit are perfectly applicable for most manufacturing purposes.

"Fulminating mercury is produced from mercury, nitric acid, and alcohol, and in consequence of the large quantity of alcohol consumed in the process the price of the product is greatly influenced by the cost of this ingredient, so that the English manufacturer has found it difficult to compete with those who can command cheap spirit. We are informed that most of the fulminating mercury now used in this country is either made from illicit spirit, or is brought from the Channel Islands, where the low price of spirit offers an advantage to the manufacturer. The methylated spirit is applicable for this manufacture.

"We have been aided in this part of our inquiry by the information kindly offered to us by Mr. Alfred White, Mr. Charles Davy, and Mr. F. Joyce.

"4. A considerable quantity of spirit of wine is sold by retail dealers, chiefly chemists and druggists, for burning in lamps as a source of heat, including its application for singeing horses. It is also mixed with oil of turpentine or other hydrocarbons for burning in lamps as a source of light. The methylated spirit is quite suitable for such applications.

"5. Spirit of wine is used as a solvent and menstruum for administering the active constituents of animal and vegetable substances used in medicine in the form of tincture, spirit, &c. These preparations being intended for the treatment of disease, and their efficacy frequently depending upon the association of substances which from long experience have been found to contribute to the required result, the unauthorised introduction into their composition of a new substance, and especially one of so marked a character as methylic spirit, cannot in any way be sanctioned. There is a large number of pharmaceutical preparations of the sort here referred to, most of which are made according to formulæ given in the Pharmacopœias, a strict compliance with which is enjoined upon those who compound them. We cannot recommend the substitution of any mixture for the pure spirit directed to be used in making these preparations.

"6. Spirit of wine is employed as a solvent of essential oils and other odorous substances used in perfumery, and it is scarcely necessary to say that the addition of anything to the spirit imparting to it an unpleasant odour must render it unfit for purposes of that description. The methylated spirit, therefore, cannot be used for the preparation of perfumes.

"7. The employment of spirit of wine in the manufacture of acetic acid by the German process of oxidation has been suggested as a possible result of the entire removal of the duty on pure spirit; but this application could not obviously be made of a mixed spirit, such as has been contemplated in this inquiry.

"8. The methylated spirit would serve for the preservation of objects of natural history, and also for the purposes generally to which alcohol is applied in chemical research. It would remove an impediment to the prosecution of science in this country, created by the high price of alcohol, which has long been complained of."

A letter was subsequently addressed to Messrs. Graham, Hofmann, and Redwood, by Mr. John Wood, Chairman of the Board of Inland Revenue, in which he draws attention to a passage in the Report, which states that, as the oils in crude naphtha are removeable from the mixed spirit by a process not very difficult, the question is reduced to the applicability of pure wood-naphtha for the object in view.

Mr. Wood says:—"I am not entirely convinced that the question is thus narrowed. We have two objects: first, to prevent the recovery of spirit of wine from the mixture in such a state of purity as to render it potable; and second, to render the mixed spirit so offensive as to prevent any temptation to its use among the workpeople, who will necessarily have access to it in the manufacturing processes in which it will be employed.

"Now it is obvious that the use of crude naphtha produces a more offensive mixture than that of the pure naphtha; and that it would probably be so offensive as to preclude its consumption by workpeople; and this would be an important point gained.

"It is also obvious that any attempt to render it potable (as an article of commerce) would be more troublesome and expensive.

"The question, then, remains, whether the crude mixture would be generally available in arts and manufactures."

This letter elicited the following reply:—

"London, 8th January, 1855.

"Sir,—The observations which we desired to add to our 'Report on the Supply of Spirit of Wine, free from Duty, for use in the Arts and Manufactures,' have reference to the mode in which the public is to be supplied with the spirit. On a review of the subject, and after further inquiry among manufacturers and others, we doubt whether it would be prudent to permit, at first, the retail sale of the methylated spirit. It has been represented to us that the unrestricted sale of the spirit would cause it to get into the hands of individuals of perverted tastes, who, in extreme cases, may use it for producing intoxication. Although we are satisfied that such a misapplication of the methylated spirit could only occur in some isolated instances among persons of confirmed habits of intemperance, yet it may be feared that even such cases would cause a public outcry against the measure before it had received a fair trial. We would, therefore, recommend that the methylated spirit should be issued, by agents duly authorised by the Board of Inland Revenue, to none but manufacturers, who should themselves consume it, and that application should always be made for it according to a recognised form, in which, besides the quantity wanted, the applicant should state the use to which it is to be applied, and undertake that it should be applied for that purpose only. The manufacturer might be permitted to retail varnishes and other products containing the methylated spirit, but not the methylated spirit itself in an unaltered state.

"In thus suggesting a restriction upon the sale of the methylated spirit, we must, however, express our belief that this limitation may be eventually removed with safety, when the measure has been fairly and fully introduced.

"Our attention having been directed by your letter of the 2nd November, 1854, to that part of our Report in which we recommend the use of purified wood-naphtha, rather than crude naphtha, for preparing the methylated spirit, we have instituted new inquiries on this part of the subject.

"We have, in the first place, to state that the distinction of crude and purified wood-naphtha is not generally recognised in commerce. The term 'crude wood-naphtha,' when used, is understood to designate a very impure sort of naphtha, not in the state in which that substance is first produced, but in a partially, although very imperfectly purified state. This product, which is of a brown colour, and contains tarry matter and oils which are not easily volatilised, after being further purified, constitutes the wood-naphtha generally met with in commerce, and which we have referred to as purified wood-naphtha. The terms 'crude' and 'purified,' as thus applied, have not any definite signification; they are used to indicate an undefinable difference of purity, the principal feature of which consists in the presence of more difficultly volatilised matter in the less pure than in the more highly purified article.

"We have further to state, that the purification of crude naphtha, to the extent to which this is effected for commercial purposes, is not attended with any difficulty. Methylated spirit prepared with crude naphtha, may also be rendered as free from taste and smell as that made with purified wood-naphtha, by simple and inexpensive means. We have had a methylated spirit prepared containing 10 per cent. of the crudest wood-naphtha we could procure, and which was quite unsaleable. Now, by a simple distillation from 10 per cent. of potash, this is highly purified, so as to be quite equal, if not superior, to the methylated spirit made with Turnbull's purified wood-naphtha, as recommended in the Report. The cost of applying this purification of methylated spirit would be less than 1s. a gallon.

"We believe that if very impure wood-naphtha be used for making the methylated spirit, the spirit so prepared will not fulfil the requirements of any class of manufacturers referred to in our Report, unless the purification of the spirit before its use be permitted, and such, we presume, would not be deemed advisable; if this purification was forbidden, the honest manufacturer would obey the law, and work to a great disadvantage as compared with his less scrupulous competitors, who would resort to illicit purification. This of itself would be a great evil, and one, we fear, quite beyond the powers of the Excise to prevent. We admit that the methylated spirit made with crude naphtha would be more unpalatable than that made with purified wood-naphtha, and that the latter would be more likely than the former to be drunk by the workmen employed in manufactories where such spirit was used; but, as already stated, we can only conceive it possible that such use would be made of methylated spirit by individuals of perverted taste, and confirmed habits of intemperance; and in such instances we doubt if even the use of crude wood-naphtha would be sufficient entirely to prevent the evil.

"The conclusions we have come to, as the result of our investigations on this subject, are, that methylated spirit made with a very impure wood-naphtha could not be advantageously used as a solvent for resins by hatters and varnish-makers, as the less volatile parts of the naphtha would be retained by the resins after the spirit had evaporated, and the quality of the resins would be thus impaired, and that such methylated spirit would be almost wholly inapplicable for chemical and pharmaceutical purposes, and for the preservation of objects of natural history. The benefits anticipated from the proposed measure would thus be greatly limited, without, as we believe, any adequate advantage resulting, either in increased security to the revenue, or otherwise.

"It is purified wood-naphtha, and not the impurity which crude naphtha contains, that presents the great and insuperable difficulty we have indicated to its separation from spirit of wine with which it has been mixed; in fact, the more highly purified the naphtha is with which the spirit is mixed, the more difficult will it be to effect an alteration of this mixture, in the way contemplated by any chemical process; and in proportion as this condition is fulfilled, the mixed spirit will be more valuable for use in the arts and manufactures as a substitute for spirit of wine; on the other hand, the impurity which constitutes the difference between crude and purified wood-naphtha presents little or no difficulty in the way of its separation, whilst for all the purposes referred to it renders the mixed spirit contained in it less applicable, and for some of those purposes it entirely precludes its application.

"We are, therefore, unable to recommend any alteration in the mode of preparing the methylated spirit suggested in our Report.

"THOMAS GRAHAM.
"A. W. HOFMANN.
"T. REDWOOD.

"To John Wood, Esq.,
"Chairman of the Board of Inland Revenue."

The following extracts from letters written by gentlemen engaged in various branches of manufacture and scientific research, will serve to show the advantages already derived from the use of the methylated spirit.

Mr. F. A. Abel, director of the chemical establishment of the war department, says:—

"The measure no sooner came into operation than my recommendation to substitute methylated spirit for alcohol and wood-naphtha in all branches of manufacture of war-material in which these articles were employed, was adopted, and, independently of the considerable saving resulting from this step, I may cite the following examples of the benefits derived therefrom.

"In the extensive use of alcohol, in the laboratory department, for moistening explosive compositions which are subject to considerable pressure or blows, it was impossible to prevent the workmen, into whose hands the alcohol was necessarily placed, from partaking of it to a very serious extent. All methods legitimately applicable with the view to check this practice were of no avail; even the mixture of the spirits with a small quantity of meal gunpowder did not prevent many workmen from indulging freely their propensity for alcohol. Since the introduction of methylated spirit there have been only very few instances of individuals who have ventured to partake of a small quantity of the spirit. It may also be mentioned that these men were immediately detected by the foremen, in consequence of the peculiar odour imparted to the breath by the methylated spirit; while formerly, although the illegitimate consumption of alcohol was very general among the men employed on that particular work, it was possible to detect only the most flagrant cases."

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"As an instance of the advantage with which methylated spirit may be substituted for alcohol in chemical processes, I may mention that no difficulty has been experienced in effecting such a substitution in the preparation of fulminate of mercury, and that we have in consequence been enabled to procure this substance, of which we employ large quantities, at a very important reduction in price."

"Mr. Frederick Joyce, of Waltham Abbey, manufacturer of anti-corrosive percussion caps and chemically prepared gun-wadding, in speaking of the spirit, says:—

"It answers well for making varnish, the methyl in such case not interfering, and I make no doubt shortly of rendering it equally available in the formation of fulminate of mercury and nitric ether, the only processes to which it is applied by me."

Messrs. Thomas De La Rue and Co. of Bunhill-row, write:—

"The privilege of using methylated spirit has been of material benefit to us in the manufacture of our goods, and we are continually extending its employment."

Messrs. Thomas Devereux and Son, of Eldon-street, Finsbury, French polishers, write:—

"The free introduction of the methylated spirit has proved of great advantage, but at the same time, we would respectfully suggest that whilst the admixture of *one ounce* instead of *three* of gum, to the gallon of spirit, would equally protect the revenue from fraud, it would be much more applicable to the purposes of our trade, so large a portion of gum rendering it unfit for the finer descriptions of work in finishing, and in varnishes."

* * * * *

"The condition of the workmen has been much improved by the advanced rate of wages that employers have been enabled to make through the reduced cost of material."

Messrs. J. T. and E. Christy and Co., of Gracechurch-street, hat manufacturers, write:—

"The methylated spirit which has entered our manufactory has been applied to the purpose of waterproof stiffening for hats. Varnishes, which also contain spirit, are prepared upon our premises, and not now purchased from varnish makers.

"So far as we are able to come to an opinion from the limited period the privilege has been available, it has been beneficial to the manufacture of hats."

Mr. George Hutchinson, of Glasgow, writes:—

"The use to which methylated spirit was applied by me, was primarily the manufacture of *oleic ether*, for the purpose of making a *lubricant* suitable for *fine machinery*, and incidentally the manufacture of sulphuric ether, which is used in medicine and photography.

* * * * * *

"It will be found of *national importance*, as being an efficient substitute for *sperm oil*, which is *getting scarcer year by year*."

Mr. Alexander Christie, of Southwark-bridge-road, who has been for many years extensively engaged in the naphtha and spirit of wine trades, says:—

"I have had ample means of knowing the baneful effects produced by the use of naphtha on the working classes, who were compelled to use it instead of spirits of wine.

* * * * * *

"The measure is of the highest importance to the manufacturing industry of the country, and a boon to the working classes engaged therein; and in order to more than double the present consumption, it is only necessary to alter the present standard of the naphtha used, and, if possible, to dispense with the bond, which is a great obstacle to its unlimited use by the smaller class of consumers.

* * * * * *

"The recent permission to use methylated spirit for the manufacture of nitre, and the low price at which it can be sold, viz., 4s. 6d. to 5s. per gal., has completely upset the illicit trade. I may mention that, of my own knowledge, I could name four individuals whose united consumption of illicit spirit did not, for years, amount to less than 500 to 600 gallons weekly, and who now do not use a gallon, but are considerable consumers of methylated spirit.

"I understand that methylated spirit is being used in a large brewery, not only in cleaning the machinery from the spent oil and grease, but in coating their vats and casks with a solution of shellac, on which the beer has no action, and by which must and absorption is entirely prevented.

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"Among those who have applied to me, and who would have been considerable consumers could they have obtained it in a pure state, without the addition of gums, and without giving bond, to which there is the greatest objection from all classes of consumers, I would mention house-decorators, gold-beaters, dyers, veterinary surgeons, philosophical instrument-makers, photographers, and also for general domestic purposes, to all of whom your regulations, as to bond, are a great barrier to its use."

Messrs. S. R. and A. White, of Castle-street, Saffron-hill, write:—

"The use of duty-free spirit has already been very beneficial to our branch of manufacture. It has enabled us to supply sulphuric ether at such a price that its use in the arts has been increased by a quantity represented by about 2,000 gallons of of spirit, while in the first six weeks after we were permitted to use it in the manufacture of sweet spirit of nitre, 600 gallons were used in the production of that article, the greater part of which 600 gallons, if not the whole, has taken the place of what was generally produced from illicit spirit; and these results have been obtained without diminishing the duty paid on spirits of wine, as we still use pure spirit as largely as formerly."

Messrs. J. F. Macfarlan and Co., of Edinburgh, write:—

"We have found the methylated spirit useful, firstly, in the preparation of spirit varnishes; these include French polish and furniture varnish; both of these are employed by cabinet makers in beautifying furniture, and are used in very considerable quantity; they include also lacquers, which are very various, and are employed by brass founders, gas fitters, &c.

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"Secondly. In the preparation of choloform.—At first it was regarded as extremely improbable that we should succeed in preparing this article fit for use in medicine, from the methylated spirit. I am, however, happy to say that we have been able to prepare it as free from flavour, as high in density, and as pure in every respect as that from spirit of wine, so that no difference can be traced between them; and that from methylated spirit has been employed as freely and with as much advantage as the other in surgical operations in the public theatre of the Royal Infirmary and in private.

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"In England, however, the prejudice against the methyl has not as yet been overcome; and hence the employment of the chloroform from it is only to a limited extent, but I feel satisfied that it will ultimately prevail.

"Thirdly. In the preparation of ethers.—The sulphuric ether is a mixed fluid with a boiling point directly in proportion to the quantity of methyl in the spirit. It has been found, however, equally safe as a medicine, and in the extraction of alkaloids by solution answers equally well with the other. We have employed it also with the preparation of tannin, of fine quality, and are thus enabled to compete with the foreign manufacturer. We have also prepared a good deal of it for photographers. In this beautiful art it now seems to answer as well as that from spirit of wine, though some still retain an affection for that from pure spirit of wine, believing it to be superior. I am inclined to think, however, that the cheaper will in the end supersede the dearer. In the preparation of nitrous ether we were long delayed by unexpected difficulties, which have been overcome, and we have now prepared it of the proper ethereal flavour, and of good quality, so as to be available in medicine."

With reference to its applicability for scientific purposes, or as an antiseptic for use in museums, the following testimony will not be uninteresting.

Prof. Goodsir, of the University of Edinburgh, says:—

"It will be some time before we can speak with confidence as to the applicability of the methylated spirit to museum preparations.

"It has proved, however, most useful for general anatomical purposes, and has enabled us to work much more comfortably than hitherto."

Dr. Stevenson Macadam, also of Edinburgh, says:—

"I have found the methylated spirit of great value in analytical research, and, from its comparative cheapness, I have been enabled to prosecute inquiries in organic chemistry, which I could not have undertaken had I been compelled to purchase pure ethylic alcohol."

Dr. W. E. Page, of St. George's Hospital, and Prof. Quekett, of the College of Surgeons, found the spirit answer for preserving anatomical preparations, though in some cases a deposit took place, which they consider objectionable. This appears to have been only an accidental impurity in the samples furnished to these gentlemen.

Prof. W. Sharpey, of University College, writes:—

"We have been using the methylated spirit for some time past in preparing and in permanently preserving specimens in the anatomical museum, and so far as our experience goes, the mixed spirit seems generally to answer these purposes as well as pure spirit of wine."

Dr. John Struthers, of the Medical School at Edinburgh, states:—

"1. That the late increase of duty in Scotland would have driven us almost to abandon the use of spirit for anatomical and pathological purposes.

"2. That the methylated spirit has been used in preference to all other preservative agents in the museum of the Royal College of Surgeons, and in the museums of the various teachers of medicine."

Professor Williamson, of University College, says:—

"The Excise duty on spirits of wine used for scientific purposes, was in truth a tax on organic chemistry; for the greater number of researches in that department of science involve the use of alcohol or some of its derivatives; and its removal by the introduction of 'Methylated Spirits' for such purposes, has already been productive of considerable benefit.

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"In illustration of the extensive influence of this cheapening of alcohol for useful purposes, I may mention that collodion, one of the chief materials of the photographer, is now prepared from ether made from methylated spirits, and sold at a far lower price than formerly.

Professor George Wilson, Director of the Industrial Museum of Scotland, at Edinburgh, writes:—

"Methylated spirit is employed, so far as I have learned, chiefly by two classes of scientific persons, viz., analytical chemists, and naturalists, including among the latter those medical professors and lecturers who have occasion to preserve the bodies of animals or parts of them, in antiseptic liquids.

"Chemists employ it in the same way as they formerly did pure alcohol or spirits of wine: (1) As a smokeless, cleanly fuel for their spirit lamps. (2) As a solvent of vegetable and animal substances, which water and the more familiar chemical reagents will not dissolve: and (3) as a means of testing or recognising bodies in the course of analysis.

"For the first of these purposes methylated spirit is equal to pure spirit of the same strength.

"For the second, it is nearly equal to pure spirit, measure for measure, and as its slight inferiority is more than compensated by its cheapness, it can be used in larger volume, so as to excel wine-alcohol in value as a solvent. The modified sulphuric ether made from methylated spirit has a similar value for analytical chemical purposes, and the chemistry of plants and animals (organic chemistry), which hitherto has been comparatively neglected in this country, as compared with the continent, owing to the cost of alcohol and ether, will now be much more largely prosecuted by British chemists than before.

"For some analytical purposes methylated spirit cannot be substituted for spirits of wine; but these are few, and consume so little alcohol that this defect is of comparatively small importance. I can assure you, accordingly, that so far as scientific chemistry is concerned, the methylated spirit is highly prized by all who are engaged in the research, and from personal knowledge I can testify that it is in constant use in the analytical laboratories of Edinburgh and Glasgow."

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"To naturalists and medical lecturers, methylated spirit is of still more value than to chemists.

"Thus it is impossible to dissect satisfactorily certain organs of the body, unless they are previously hardened in spirit, but the cost of this has hitherto greatly limited its use in our anatomical rooms, much to the disadvantage and discomfort of the student. To him, accordingly, the introduction of the methylated spirit is a great boon."

TONNAGE REGISTRATION.

The following letter, addressed to the editor of the *Mechanics' Magazine*, has been received from Mr. Atherton, in reply to the article which appeared in the last number but one of the *Journal*:—

Sir,—Referring to your editorial article in the *Mechanics' Magazine* of the 20th inst., No. 1,728, and which also appeared in the *Society of Arts Journal* of the 19th inst., No. 200, I am reluctant to renew our discussion on the Tonnage Question, because really, so far as I can gather from your past and present reviews of my papers, we are perfectly of one accord on the subject matter involved in our discussion, namely, the desirableness in a public point of view of rendering our statistics of Shipping Registration more complete than they now are, under the Merchant Shipping Act of "1854." The object with which, from the first, I have availed myself of the facilities so liberally afforded by the Society of Arts, by the *Mechanics' Magazine*, and by the British Association, for bringing questions of this character before the notice of the public, has been to elicit thorough investigation into the merits of the question, and obtain a demonstration of public opinion thereon through some channel having recognised claims for being regarded as an exponent of the sentiments of that section of the public who interest themselves in scientific questions of this character, for without such an expression of public opinion a case would not be satisfactorily established on which the revision of an Act of Parliament could be reasonably entertained. This, my object, has been fully attained, for, in addition to the mark of approbation awarded to me at the Society of Arts (the Society's medal), and the fact of the British Association having referred my papers to committees of the mechanical and statistical sections, the articles which have appeared in the *Mechanics' Magazine*, not merely as the contributions of a correspondent, but expressly put forward as editorial reviews, are surely entitled to the deference which attaches to the expression of opinion by the literary exponent of an influential, and, in this matter, a peculiarly qualified section of the public; and when it is further considered that this authoritative declaration of opinions is put forward and advertised as a comprehensive review of the Tonnage Question, it is, I beg to assure you, with the greatest satisfaction that I forego any petty points of difference of opinion that may exist between us as to any suggestions which I have made with a view of remedying the deficiencies of our present system of Shipping Registration. I am proud to regard myself as acting in cooperation with the editor of the *Mechanics' Magazine*, as the organ of the section of the public before adverted to, claiming the revision of the Merchant Shipping Act of "1854," as respects the admeasurement for tonnage and the registration of shipping, on grounds so forcibly expressed and so spontaneously advanced in the editorial articles of the *Mechanics' Magazine*, in the following terms:—

1st. Because "the tonnage measurement and registration of vessels has never been brought before Government in any other than a purely fiscal point of view."

2nd. Because "Government, in legislating on tonnage registration, has not contemplated the scientific features of the case, nor those which bear on the sea voyage."

3rd. Because "undoubtedly there is a point beyond which ships cannot be safely loaded."

4th. Because "undoubtedly it would be desirable, if possible, to fix a limit to the degree to which ships may be loaded."

5th. Because "as regards the draught of water at which ships leave port, let the Board of Trade have, if it so please, properly authorised officers to note and record the facts."

6th. Because "we should see with satisfaction a competent Committee appointed by Government, or by the British Association, with a view of ultimately, if need be, acting on the Government, to take into consideration the foregoing points."

7th. Because "some definite displacement of a vessel involving the settlement of the whole weight, when fully equipped for sea, being a necessary datum for any scientific inquiry, it may be worthy of consideration whether the constructor of every vessel may not be required to furnish to the Board of Trade, for the purpose of registration, what he designs to be the vessel's load displacement."

8th. Because "in vessels of war the constructor always fixes and calculates the load displacement, and there seems no reason why this course should not be pursued with regard to merchant ships."

9th. Because "we do not anticipate any great repugnance on the part of shipbuilders and shipowners to register what may be taken as the mean fair load of the ship."

10th. Because "a knowledge of the weight of cargo designed to be carried by each ship, being the difference of the constructor's load and light displacement, would (if it should please the Legislature to require such registration) supply all the information that could be fairly required for statistical purposes."

11th. Because "the nominal horse-power of a marine engine gives no indication whatever of the real power to which it can work; for, while some marine engines work up to twice, some will work up to four times, the nominal power."

12th. Because "to test the value of a vessel propelled by steam in a mercantile point of view, we require to know the weight propelled and the power actually exerted in propelling it, and also the speed at which it is moved."

13th. Because "in a scientific point of view, a more correct mode of estimating horse-power is required."

14th. Because "every fresh vessel of improved form and steam-power application tends to lower freights, so as to give the public a good share of the advantages resulting from the adoption of good types of build and efficient adaptation of steam-power, so as in a moderate number of years materially to lower the average freight charge for every ship."

15th. Because "it must be admitted that there are such deficiencies in the registration of tonnage and horse-power as to render all scientific inferences drawn from those data valueless."

16th. Because "what is required is that the registered horse-power should really represent the effective horse-power."

There is just one other point, the exposition of which will doubtless meet with the concurrence of the editor of the *Mechanics' Magazine*. I therefore take the liberty of noticing the following tonnage anomaly, as an additional ground on which to demand Tonnage Registration reform, namely,—

17th. Because, under the present system of tonnage admeasurement and registration, it appears that five ships, the property of one Company, are advertised (see *Times*, Sept. 20, 1856) as being collectively 15,000 tons burthen, whilst their registered tonnage, at which these same ships are rated for certain fiscal dues, is only 7,488 tons.

Such being the comprehensive terms in which the editor of the *Mechanics' Magazine*, in his editorial articles, has acknowledged the deficiencies of our present system of tonnage admeasurement and shipping and engine-power registration, thus confirming in each of these particulars the statements which I have advanced in my papers, I see no occasion to disturb the harmony of our joint agitation with a view to the amendment of the law in regard to the fundamental deficiencies above set forth, by raising any question on the differences of opinion that may exist between us as to the mode of correcting these deficiencies; for, on this point also, namely, the amendment of the law, I concur with the editor of the *Mechanics' Magazine* in paying deference to the decision that may be arrived at by the committee appointed by the British Association to consider these matters, the committee embracing among its members, as is acknowledged by the editor of the *Mechanics' Magazine*, "gentlemen some of them eminent for scientific ability, and others for skill as practical builders, which holds out a prospect of impartiality in the conduct of its deliberations." In the hands of such a committee the shipping interests will surely have no occasion to apprehend unreasonable interference, nor to proclaim the wail "*Timeo Danaos et dona ferentes*," which the editor of the *Mechanics' Magazine* has been pleased to ascribe to them.

I am, &c.,

CHARLES ATHERTON.

To the Editor of the *Mechanics' Magazine*.

MARINE CEMENTS.

The following is an abstract of a paper on "The Materials employed in Marine Works," presented to the French Academy of Sciences by M. Chatoney, engineer of the Ponts-et-Chausseés, and M. Rivot, mining engineer. A favourable report upon it has been made by a committee, consisting of the following gentlemen:—MM. Chevreul, Poncelet, Dufrénoy, and Marshal Vaillant.

Argillaceous or siliceous limestone requires much pulverising before being subjected to the heat of the kilns, in order to produce a good quality of hydraulic lime or cement. A thoroughly compact texture, and a sufficient quantity of carbonate of lime at the surface, to protect it against the action of the sea-water, are necessary conditions of stability; but the best chemical composition of the materials can only be determined practically by experiments made almost on the very spot where the works are to be constructed.

Excellent siliceous hydraulic lime may be artifically obtained by submitting to a moderate heat a mixture of 70 to 80 parts of pure limestone, and 20 to 25 parts of fine sand or flint; a definite silicate of lime ($\text{Si. O}^3 + 3\ \text{Ca. O.}$) which in forming a hydrate takes up six atoms of water. The more intimate the previous mixture of the materials the better.

The argillaceous hydraulic lime produced by burning either natural or artificial mixtures of limestone and clay, is not found to be so well adapted for use. The proportion of 20 to 22 parts of clay to 80 parts of limestone is found, upon the whole, to be the best. When the product contains too large a quantity of free lime, it is found advisable to use rather a clayey sand in mixing the mortar; this renders it more binding, and gives it greater power of resisting the action of sea-water. Too much clay would be very injurious, so that great care should be taken, and special experiments made, wherever this latter plan is adopted.

Cements which set quickly, and are prepared under moderate heat, are always difficult to manage in marine works, as they contain no free lime, and, consequently, their hardness is all that preserves them from the influence of the sea-water. They may, however, be improved by adding a certain proportion of lime, and letting the mixture stand a considerable time.

Natural or artificial cements well burnt, and containing only a small portion of quicklime, such as those of Parker, the Medina, or the Portland, owe the great solidity which they acquire under water almost entirely to the presence of the hydrosilicate, as $\text{Si. O}^3 + \text{Ca. O.} + \text{H. O.}$ contains less water by half than the corresponding silicate produced in the hydraulic lime or cement, which is burnt at a lower temperature. These are found to answer best for works which are constantly immersed. They would probably not answer so well for those which are exposed on each side to the effects of water at varying heights.

Artificial pozzolana but seldom gives good results. With natural pozzolana fat lime should be used in preference to hydraulic lime, and it is most important to submit the mixture previously to a long soaking in a small quantity of water. This plan is adopted by the Dutch engineers, and tends to account for their remarkable success.

Sea-water differs much from fresh-water in its effect on different kinds of mortar and cement, not only from the constant and often violent action of the tide and waves, but from the various salts, carbonic and frequently hydrosulphuric acid held in solution.

Sea-salt generally retards the setting of mortar and cement; the salts of magnesia exert but little action on free lime, or on the aluminate of lime.

The proportions of carbonic and hydrosulphuric acid vary much in different localities; they exert an action from the first moment of immersion until complete decomposition is effected, or at least till the cement becomes solid and impenetrable. They act first upon the free lime, and then upon the aluminate.

It has been noticed that where shells are very abundant, submarine works become covered with a sort of calcareous coating, which effectually protects them against all further action, and this protective influence of the marine animals may be best imitated by adding to the mortar or cement employed, free lime, in a proportion which must be determined experimentally for each locality.

Particular stress is laid on the following qualities, as essential to the formation of good hydraulic mortar:—

It is essential that the materials should be thoroughly pulverized before mixing, so that the combination may be as perfect as possible.

Sufficient free lime must be present to allow the carbonic acid in the water to combine with it, and form a protective coating of carbonate.

A long soaking of the materials is advisable, in order that the chemical combinations necessary for the ultimate stability of the mortar may take place before it is actually used.

Colonial Correspondence.

COLONIAL LABOUR.

25, Bernard-street, Russell-square, Sept. 22nd, 1856.

Sir,—Colonial labour is a problem not easy of solution, but if we wish to make available the various resources of our numerous colonial possessions, it is one which must be solved. Happily we have to deal with free labour. In time we stepped forward—we have always been first in the march of freedom—to liberate the slave, and thus escaped that fiery vengeance which overtook and annihilated the proprietors of human flesh in St. Domingo, which threatens Cuba, and which now hangs like a thick cloud over the Southern states of America, where the struggle in Kansas foreshadows, not the extension of slavery, but its death. Viewing with unmixed disgust the philo-slavery effusions contained in some recent silly female productions, and not accepting, without a liberal allotment of salt, the amusing and exciting extravaganzas of the amiable and ingenious Mrs. Stowe, I think, that of all the curses inflicted upon fallen man, slavery has been the most bitter and enduring in its effects. It has been equally a curse to the slave and to the master. The former has been degraded, the latter demoralised. The one has lost individuality and self-appreciation; in the other the heart has been depraved, and the best feelings of our common nature have been stifled. Happily, as I said before, we have got rid of the accursed thing, and we have now to deal with men as free to act as ourselves, and we must proceed upon the principle of mutual benefit and reciprocal dependence, a principle possessing more astringency between the employer and the employed, than the relationship of the master and the slave. But admitting all this, where are free labourers to be obtained? It is undoubtedly the fact that, in the greater part of our West India colonies, there is a scarcity of suitable labour. This dearth has been produced by several causes. First, there can be no question that the tone of mind which ensued when the shackles of bondage were struck off did for a long time, and does now to a very considerable extent, render extremely difficult the employment of labourers *in* the colonies. The bow, when released from its tension, assumes a curve in the opposite direction. In like manner was it with the mind of the negro. When he was a slave he was compelled to work against his will; when he became a free man it was his special enjoyment—it was the clear and unmistakeable assertion of his rights—not to work at all. He could not persuade himself that he had ceased to be a slave if he did not luxuriate in complete inaction. His physical wants were few and easily supplied, but repose was his supreme felicity; this he revelled in. It was to him meat and drink and gorgeous apparel. It was everything. Nothing was further from his thoughts than work. It smelt of the chain—it savoured of the lash. This feeling is not so strong among the negro population now as it was several years ago, but it certainly still exists. It is this feeling which stimulates the negro to demand so exorbitant a remuneration for his services, and makes him unwilling to perform the most trifling act without a fee.

Another cause of the scarcity of negro labour in our colonies may be traced to the acts of the employers themselves subsequent to emancipation. Whilst sugar, and rum, and coffee were realizing immense profits to the producers, the West India planters, like the merchants of Tyre, were princes—they rioted in excess—they wallowed in profusion. Purple and fine linen were their apparel; cedar of Lebanon, and gold from Ophir, composed their dwellings. But they saw not, or cared not, for the future. The cloud upon the horizon, but yet the size of a man's hand, was undiscerned by them; therefore, when the struggle came, their loins were not girded, when darkness overspread the land, their lamps were not burning. Then came distress, and bankruptcy, and ruin. But when the battle, even at the last moment almost, might have been retrieved by courage and resolution, instead of seizing a fresh sword and a new spear, and rushing into the conflict, they fell upon each other's necks, like the chorus in a Greek tragedy, and, weeping over their fallen fortunes, gave utterance to plaintive cries. As a last resource, and to keep their heads above water from day to day, they disposed of their lands, bit by bit, in small allotments, to those very negroes, now standing erect before them, with liberty written in every lineament of their swarthy features, who formerly had spoken with "bated breath," and crouched and shrunk with naked back from the biting cat. They thus raised the negro population, who would have become in due time a useful labouring class, to be the lords of the soil. This act of infatuation sealed their doom. What negro could be induced to labour for another who had an acre or two of land to cultivate for himself. Henceforth he himself would have a stake in the country. He was free—aye, as free as the white man, his former lord. He would not labour as a serf—why should he? That time had passed, Bnt he would be the founder of a family, and transmit to his free descendants the paternal estate. In this way many reasoned, and although we cannot admit the correctness of their logic, it is impossible not to appreciate the new-born self-esteem which dictated such sentiments.

There is another cause now at work, which is striking at the very roots of the labouring classes in the colonies. Every one must acknowledge the necessity of a sound secular, moral and religious education for the poor. It is the lever with which we hope to elevate them above vicious tastes and degrading propensities,—it is the instrument with which we seek to make them useful and intelligent members of society and good Christians. But the education, to contribute to these desirable ends, must be practical. It must be an education which will be really of use to them in the station in which Providence has placed them. But in some of our colonies a system of tuition has been adopted in their free schools, by extremely worthy, well-meaning, but, in my humble opinion, mistaken persons, very ill calculated for those who are designed to profit by it. The children, male and female, of the negro population, are taught, or attempted to be taught, a knowledge of things which can never in the slightest degree, if remembered, benefit them in after life, but which is certain to puff them up with vanity and conceit, and dispose them to think that they are fitted for higher destinies than that of manual labour. I would not have it supposed that I would encourage any obstruction in the way of intellectual advancement. On the contrary, I would remove every impediment. I would teach the children of the poor to read, write, and draw well,—they should learn arithmetic, and they should be thoroughly imbued with sound principles of religion and morality. I would also have them instructed in mechanics and the industrial arts. I would instil into their minds general ideas of navigation, husbandry, ironfounding, tanning, currying, bread-baking, building, carpentry, shoemaking, &c. They should be taught to manage the tiller, to guide the plough, to wield the hammer, impel the shuttle, and direct the saw. A knowledge of such things would be of infinitely more use to them than a superficial acquaintance with metaphysics and logic, history and astronomy, composition and poetry, Latin and Greek, the niceties of grammar, and the subtleties of style. To the labouring mechanic, to the child of toil, who must win his way by the sweat of his brow, what avails the rise and fall of empires long since departed? Why should he trouble his head about Cyrus, or Alexander, Cæsar, or Charlemagne? What need he care for Hengist or Vortigern, William or Harold?

"What's Hecuba to him or he to Hecuba
That he should weep for her?"

His business is with the present, not with the past—with facts, not with ideas. It has been said that a *little* learning is a dangerous thing. So it is; but not so a little knowledge. The former generates humours and conceits—the latter increases the appetite whilst it feeds it. The former causes a man to run from one to another, like the "Bourgeois Gentilhomme" of Molière, babbling about nouns and pronouns—the latter leads to the invention of the telescope and the steam-engine. Possessing the qualifications which such an education as I have described would give to them, they "should have the world before them where to choose." If a boy was gifted by nature with superior ability, and had a taste for learning, he would addict himself to the acquisition of knowledge and would rise above his fellows. If he did not possess those qualities, his mind would not have been pampered with educational dainties, and he would not be unfitted for the vulgar occupations of life. He would be a good citizen, working honestly, early and late, at his vocation, as did his fathers before him. Such persons as "village Hampdens" and "mute inglorious Miltons" *may* have existed,—but I do not believe it. Genius, through every difficulty, will make itself known. It will burst the trammels of humble station, and snap the fetters of ignorance. Whether a man be at the plough, or at the loom, or tending sheep upon the mountain slopes, if he possess within him the germ of poetry, or science,—it needs no propagating house to bring it forth,—the ordained incident *will* occur to make it shoot forth and unfold its virgin leaves. No country can prosper, unless it contains a numerous labouring class. Where are our railways, our steam-engines, our line-of-battle ships to come from? Nay, where are we to get the common necessaries of life? Is it wise, then, in our colonies, where the labouring class is so scarce, still further to diminish it, by an injudicious education? I wish not to be misunderstood. I have said that I would educate all,—but the education I would give should be a suitable and a practical one. I would, however, throw no obstacle in the way of those who had talent and taste for higher acquisitions. I would give to a boy such an education as would enable him to become an excellent and contented shoemaker, carpenter, or engineer, or which would afford him the materials with which he might cut his way to the position of a learned professor, a minister of state, or a lord-chancellor. It may seem a harsh saying,—but it is a very true one,—the poor are necessary,—they are an institution,—we cannot get on without them. "The poor ye have always with you," said one, who spoke not as men. And the poor we *shall* have always with us. It is reported to have been said by Henri IV. of France, "that he hoped to see the day when every man would have his fowl under his pot." A very benevolent, but a very shallow observation. If the good Henri had had his wish gratified, there would soon have been neither fowls nor pots. The foregoing observations, however, are intended to apply more particularly to the colonies.

Whatever be the cause or causes, labour does not exist in the colonies in sufficient quantity to develop fully their varied and inexhaustible treasures. Whence is it to come? As far as regards British Honduras, I will endeavour to show. I have frequently addressed you on the subject of the different productions of that possession. They are rich, but not rare. The peculiar political position of Honduras is not unknown to you. In my poor opinion the time has now arrived,—but I speak with the greatest submission,—when that position might safely be altered, and Honduras be placed in the list of British colonies. Many circumstances have recently occurred which would greatly favour the adoption of such a course at the present moment,—at a future time there might be greater difficulty. It is not only in the affairs of men that there is a tide which leads to fortune. The affairs of nations have it also. If British Honduras were declared to be a colony, there are highly respectable and wealthy mercantile houses who would be prepared to enter earnestly into its cultivation. The uncertainty of existing relations alone prevents them.

The price of labour in Honduras is much higher than in any of our West India possessions. The wages are from 12 dols. to 20 dols. per month, with rations. The latter consist of one pound of pork and one pound of flour per day. Sometimes six plantains are substituted for flour. In Antigua and Barbadoes, the wages are from fivepence to eightpence per day; in Jamaica, from tenpence to a shilling. In these colonies the labourer receives no rations. In Honduras a wide field is open for enterprise,—that is, if all uncertainty regarding the tenure of property in that country were removed. There is a theatre for labour,—a theatre for capital; neither the one nor the other is wanting. There is in this city one mercantile house which has long been connected with Honduras as a wood producing country, ready to enter largely into the general trade of that settlement, and procure the labour necessary for developing its resources.

The first place to which one naturally turns his eyes for agricultural labour is the neighbouring province of Yucatan. The Indian population of that district, in consequence of the war which has been raging for many years between them and the Spanish inhabitants (who, by the way, are a mixed race), has been greatly reduced. It does not number at the present moment above 70,000, or 80,000 at the most. A great portion of these inoffensive people might be induced, if the proper means were adopted, to come across the Hondo and engage themselves as agricultural labourers; but they have of late been rather frightened of leaving their own country. A few years ago a villainous system was set on foot, and pursued for some time with success, by certain individuals in Cuba, of entrapping them on board of small schooners on pretence of hiring them as paid free labourers, and then sailing away to that island and making slaves of them. It is much to be feared that the Spanish authorities in Bacalar and Merida had a hand in this treachery. There would not, however, be much difficulty in convincing them of the honour and fair dealing of British merchants, and the poor creatures would be glad to escape from their oppressors.

The mercantile house to which I have alluded would send vessels to Antigua, Barbadoes, Jamaica, and other islands, and give to labourers a passage to Honduras at a nominal rate, and a pledge to convey them back within a certain time if they should desire it. Labour might thus be obtained for cultivating the vegetable products of Honduras at about 8 dols. per month; this rate, although very considerably lower than what is paid at present, is still very far from being bad wages; 8 dols. per month is nearly £20 per annum. To this would probably be added the use of a small piece of land as a provision ground, in which the labourer's family might cultivate a few esculents, such as yams and plantains. Coolies from India and China might also be brought over, if the Government thought proper to advance the necessary funds on the credit of the colony. The expense of bringing able-bodied coolies from Madras or Calcutta would be about 60 dols., or £12 each, and from China about 100 dols., or £20 each. Both the coolies and the Chinese are accustomed to agricultural labour. The latter are very intelligent, and on that account they have been preferred in Cuba, into which island a considerable number have been imported, to the negroes, although they are very much inferior to them in physical strength. There are in Jamaica a large number of Indian coolies altogether unemployed. They wander along the streets and roads begging, and offering for sale a kind of umbrella, manufactured by them of palmetto leaves, in the manner of their own country. They are most of them tall, stalwart, muscular fellows, and capable of doing a very good day's work. They have not been over-well treated in Jamaica. When they arrived it was found that the negro, who, with all the virtues which have lately been discovered in him, is a very exclusive and conceited gentleman (especially when he gets on his black dress coat, white neckcloth, silver ring, and lacquered watch-chain) would not fraternize with them, and they were consequently thrown on their own resources in a strange country. These unfortunate and abandoned creatures are not, as it has erroneously been said of them, unwilling to work; although it is by no means improbable that having been so long unemployed they may have contracted habits of idleness. They, I have no doubt, would be glad to come to Honduras, and engage in agricultural labour for moderate wages. The coolies in India could be hired for 6 dols. per month, and the Chinese labourers for 8 dols. A Government loan for five years of £36,000, at 3½ per centum per annum, would enable the colony to import yearly 4,000 coolies and 600 Chinese at an average of 7 dols. per month; and a tax of 1¼ dols. per month to be paid by the hirer, would repay on account of the loan more than half of the sum advanced. Since the lamentable destruction of the vines in Madeira, very efficient agricultural labourers might be obtained from that island. Undoubtedly, the great source of agricultural labour for the tropics is Africa. Some years ago agencies were established on the Kroo coast for the purpose of encouraging the emigration of negro labourers to the West Indies. That attempt, however, was unsuccessful, in consequence of the opposition of the Liberian Government, who claimed to be protectors of the Kroos and other tribes to the north of Cape Palmas. Suspicions were also excited amongst certain parties in this country that the scheme was an attempt to revive the slave trade. The gentlemen who were engaged in promoting this emigration, would sooner have cut off their right hands than have done one single thing which could, in the slightest degree, have renewed so odious a traffic. The feelings which the bare suspicion of such an atrocity aroused were too powerful to contend against, and the scheme was abandoned. It must, however, be said, that a practice of bringing negroes from Africa by private persons, would be open to abuse, and it is unquestionably liable to very grave objections. Unscrupulous persons would have an opportunity afforded them of shipping Africans in their own country, on the pretence of engaging them as free labourers for the British West Indies, and afterwards of selling them to slave owners in Cuba or the Brazils. But if proper safeguards were adopted; if agents were appointed by the British Government in those districts where labourers might be hired, or shipped, to superintend the proceedings, and if the vessels engaged in transporting emigrants should not be otherwise employed during the time they were so occupied, and if a Government officer were placed on board of each of those vessels, there could not then be any apprehension that negroes would be inveighled from their own country to be consigned to slavery. A rule should also be established that prisoners of war should not be permitted to be engaged, but only those who were at liberty, and free to act as they thought proper. The Liberian Government, however, requiring labour themselves, are interested in opposing every scheme of emigration, and, in order to carry their point, have not scrupled to have recourse to misrepresentation and falsehood. They have endeavoured to impress upon the different populations by which they are surrounded, that the emigration proposed would be a repetition of the horrors of the middle passage, and the labour in the West Indies a renewal of former slavery. For the purpose of removing the prejudices thus engendered, some of the chiefs of the different African races were taken to Demerara and brought back again, when they explained to their countrymen the real character of negro labour in the West Indies. This no doubt had a beneficial effect. In Africa, stout healthy labourers may be engaged at tenpence per day, or 6 dols. per month. The cost of the passage would be £7 each, which is about half the expense of bringing over the coolies. I should recommend that each labourer, in addition to his wages, which should be paid regularly every month, or every day, if he wished it, in CASH, should have allotted to his use a small portion of land, for the purpose of raising a few esculents, breeding pigs, or rearing poultry, which occupation might be attended to by his wife. But he should only be permitted to have the *use* of this land as long as he continued in the employment of the proprietor of the soil. If he left his service he should be required to leave his provision ground also, but should be entitled to take away with him the growing crops if they were sufficiently mature to gather, and if not, to receive the value of them. Nothing would be more injudicious than giving the labourers the land, however small the quantity, in fee. If they have land of their own, they *will not* work, neither will they cultivate their own property to any useful purpose. A few yams, plantains, ochroes, peppers, and perhaps a dozen or two heads of Indian corn, are all that they will grow, and for these little or no labour is required. But we wish to have the soil cultivated for the purposes of commerce, not merely for temporary, local provision. For this, capital, skill, and intelligence are necessary. To this subject I intend to draw your attention at another time. My business is at present with labour. The duties and qualifications of the cultivator, the mode of granting land to him, and the price at which it should be sold or let, are separate inquiries.

I hope I have now said enough to show, if Honduras were recognised as a colony, how capital would be forthcoming, and how labour could be obtained for the purpose of bringing that neglected country into fair competition with other colonies in the race of commerce. In the production of fibres and oils it would very soon be foremost. In one vegetable product—the cahoun palm—it would stand alone, and he who first brings the valuable fruit of that tree into general use in this country, surely he shall reap his reward, and in him will be verified the words

Palmam qui meruit ferat.

I am, &c.,
R. TEMPLE.

THE PUBLIC LIBRARIES ACT.—A meeting of the ratepayers of Cheltenham was held recently, convened by the high bailiff on a requisition signed by about thirty gentlemen, to consider the propriety of adopting the Public Libraries Act in that borough. A resolution in the negative sense was, however, carried by a large majority.

Miscellanea.

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COFFEE AS A DEODORISER.—Now that the " sporting season" has again come in, sportsmen and others are reminded that fresh-ground coffee is a perfect and safe deodoriser: a sprinkling will keep game fresh and sweet for several days. Clean your game,—that is, wipe off the blood,—cover the wounded parts with absorbent paper; wrap up the heads, and then sprinkle ground-coffee over and amongst the feathers or fur, as the case may be: pack up carefully, and the game will be preserved fresh and sweet in the most unfavourable weather. Game sent open and loose cannot, of course, be treated in this manner; but all game packed in boxes or hampers may be deodorised as described. A tea-spoonful of coffee is enough for a brace of birds, and in this proportion for more or for larger game. Fresh-ground coffee may be used with advantage in a sick-room; a few spoonfuls spread and exposed on a plate and burned by a red-hot iron, is a safe and pleasant fumigator.

BESSEMER'S IRON-MAKING PROCESS.—The Staffordshire correspondent of the *Engineer* of Friday, the 19th ult., gives the particulars of an experiment made by the direction of the Messrs. Barker, the managing partners of the Chillington Company, of Wolverhampton. He says:—" On Tuesday last a piece of one of the bars made at Woolwich from iron refined by Bessemer's process was heated and rolled out to a thin sheet at one of the Woverhampton mills. With a view to its being rolled yet thinner, the sheet was then doubled, again heated and again rolled, when it came out duplicate pieces of No. 23 guage, 12 inches long by about 4 inches wide. These were then annealed in the manner customary in the finishing of sheets so thin, and when cold were submitted to the following very severe test. They were taken to a tobacco-box maker in the same town, and, still cold, were punched out into the required shape for such an article. Operated upon first lengthwise and then across, the resistence was the same—perfect. It seemed as ductile as a piece of good block tin. In the words of the workmen conducting the operation, ' it was as as tough as leather.' The box was completed and the burnishing tool applied, when a polish was produced that if the process had been continued a little while longer would have ' equalled,' the operator said, ' the polish of steel.' 'A better bit of iron,' this man said, ' I never worked.' The heating that the iron went through in Wolverhampton was not calculated to improve its quality in any great degree, as all must be aware who are familiar with the process of making plates of a very thin gauge—for the heat imparted is only about red heat. ' From this test, said the intelligent foreman before quoted, ' I am satisfied that the iron refined by Mr. Bessemer's process requires only rolling for the developing of the fibre.' "

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, September 26th*, 1856.]

Dated 27th August, 1856.

1995. Joseph Manuel Giresse, St. Macaire, France—A new machine to mince tallow and meat.

Dated 30th August, 1856.

2017. Armand Louis André Herbelot, Paris—Improvements in obtaining motive power by gases or fluids.
2019. John Pope, Canterbury—Improvements in the mode of cultivating and treating the hop plant.

Dated 9th September, 1856.

2097. John Watson, 30, Tureen-street, Glasgow, and Charles Frederick Halle, Manchester—Improvements in spinning or twisting fibrous materials.
2099. Hannay Cunningham, Pitarthie, Fife, Scotland—The production of blanks for bank notes, bills, checks, treasury bonds, scrip, stocks, &c., to prevent counterfeiting, &c.
2100. William Gossage, Widnes, Lancashire—Improvements in the manufacture of certain kinds of soap.
2101. Richard Archibald Brooman, 166, Fleet-street—An improvement in an apparatus for sprinkling substances in a state of powder. (A communication.)
2102. Charles Brook, junr., Meltham Mills, near Huddersfield—An improvement in polishing or finishing yarns, threads, and woven fabrics.
2105. William Smith, 10, Salisbury-street, Adelphi—A powerful compound whistle. (A communication.)

Dated 10th September, 1856.

2106. Henry Cooke, Manchester—Certain improvements in dyeing yarns or threads.
2107. Charles William Siemens, John-street, Adelphi—Improvements in electric telegraphs and apparatus. (A communication.)
2108. Alexandre Robert, La Villette, near Paris—A new process of treating, smelting, and refining copper, tin, and other refractory metallic ores.

2109. Henry Duncan Preston Cunningham, Gosport, Hants—Improvements in reefing sails.
2110. George Riley, 1, The Grove, South Lambeth—An improved mode of treating maize for distilling, with apparatus therefor.
2111. Johannes Neuenschwander, canton of Bern, Switzerland—Certain improved processes of preparing milk to be preserved.
2112. Henry Gilbee, 4, South-street, Finsbury—Improvements in the manufacture of iron. (A communication.)
2113. John Taylor, Spring-grove, Hounslow—An improvement in building walls.
2114. Joseph Christian Davidson, Yalding, Kent—An improved construction of share drill.
2115. Stephen White, Newlands-street, Everton, Liverpool—An improved method and apparatus for the distillation of certain oils or oily substances from the petroleum, commonly called "earth oil," found in certain districts in the Birman empire, and an improved method of purifying the oils or oily substances so obtained.
2116. Joseph Christian Davidson, Yalding, Kent—An improved construction of hop bin or hop frame.
2117. William Webster, 22, Bunhill-row—Improvements in troughs for feeding animals. (Partly a communication.)
2118. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in machinery or apparatus for making bricks. (A communication.)
2119. William Oldham, Southam, Warwick—Improvements in the manufacture of cement, and in treating or preparing colouring matter for cements.
2120. William Henry Forster, Gravesend—An improved fastening for articles of jewellery, brooches, or dress ornaments.

Dated 11th September, 1856.

2121. John Blythe Robinson, Beverley, Yorkshire—Improvements in machinery for effecting agricultural operations. (A communication.)
2122. John Gedge, 4, Wellington-street South, Strand—Improvements in paint or colouring matter applicable to coating metals and other substances, whereby the oxidation of metal is prevented, and resistance to the action of the atmosphere, rays of heat or acids is secured. (A communication.)
2123. James Hudson, Halifax—Improvements in whetting or setting "printers' doctors," and other straight-edged tools or instruments.
2124. Pier Alberto Balestrini, Brescia, Italy—Improvements in protecting and laying telegraphic wires.
2125. Richard Atkinson Coward, Lawrence Pountney-lane—Improvements in paddle wheels for propelling vessels. (A communication.)
2126. John Milnes and William Thompson, Sutton Mill, Kildwick, Yorkshire—Improvements in looms for weaving.
2127. Lucius E. Truesdell, Warren, Massachusetts, U.S.—An improvement in weight-distributing bridges.
2129. Alexander Chaplin, Glasgow—Improvements in ships or vessels.
2130. Albert Demerit Bishop, Hanover-house, Charlton, Kent—Improvements in derricks for raising sunken ships and other heavy bodies from below water, and moving heavy bodies from one place to another.

Dated 12th September, 1856.

2132. William Stettinius Clark, Camden-town—Improvements in hydraulic heaters or furnace. (A communication.)
2133. John James Leaver, 17, York-street, Rotherhithe—An improved pump for pumping, raising, or forcing water or other liquid.
2134. John Talbot Pitman, 67, Gracechurch-street—Improvements in repeating fire-arms. (A communication.)
2135. Joseph Koronikolski, 36, Lisle-street, Leicester-square—Improvements in baking ovens.
2136. Henry Dubs, Vulcan Foundry, Warrington, and Josiah Evans, Haydock, Lancashire—Improvements in slide valves.
2137. Edward Paton and Charles Frederick Walsh, Perth, N.B.—Improvements in fire-arms and projectiles.
2138. Irénée Leys, Dunkerque, France—Certain improvements in the preservation of cheese.
2139. George Hutchison, 160, Hope-street, Glasgow—Improvements in the treatment of oils and fats.
2140. John Elliott, Southampton—An improved apparatus for containing and supplying water, gas, and other fluids, applicable also to a fluid meter.
2141. Richard Archibald Brooman, 166, Fleet-street—Improvements in treating and purifying water to be used in the washing and scouring of wool, and in other washing and cleansing operations. (A communication.)

Dated 13th September, 1856.

2143. William Whittle, Smethwick, Staffordshire—New or improved machinery for the manufacture of nails.
2147. Frederic Ducimetière Monod, Marseilles—Improvements in the manufacture of chlorine.
2149. Christopher Hill, Great Western Railway, Chippenham Station—Improvements in the manufacture of lubricating matters.
2151. John Buchanan, Katrine, Ayrshire, N.B.—Improvements in propelling vessels.

Dated 15th September, 1856.

2153. John Knowelden, Southwark—Improvements in the arrangement of valves and apparatus for preventing steam-boiler explosions.
2155. Cornelius Ferguson Clements, Liverpool—An improvement in separating copper and other metals from ores containing them.
2157. George Cranstoun Trotter Canstoun, Chirnside-bridge, George Young, Dunse, and John Lovell, Chirnside-bridge, Berwick, N.B.—Improvements in the application of steam for producing a boiling action in bleaching and other manufacturing processes.
2159. Stanislas Chodzko, Paris—Improvements in the manufacture of manure and the apparatus employed therein.

Dated 16th September, 1856.

2161. Alfred Vincent Newton, 66, Chancery-lane—An improved preparation of phosphoric acid. (A communication.)
2163. Robert Walker, junr., 62, Buchanan-street, Glasgow—Improvements in ascertaining the draught of water and trim of ships or vessels.
2165. George Tomlinson Bousfield, Sussex-place, Loughborough-road, Brixton—Improvements in power looms for weaving wire cloth. (A communication.)
2167. John Elliott, Southampton—An improvement in taps and cocks.
2169. Robert Mushet, Coleford, Gloucestershire—Improvements in the smelting of iron ores.
2171. Joseph Gilbert Martien, Newark, New Jersey, U.S.—Improvements in the manufacture of iron.

Dated 17th September, 1856.

2173. Charles Marsden, Kingsland-road—Improvements in fastenings for shirts and other garments, together with an improved tag.
2175. John Barber, Manchester—Improvements in machinery or apparatus for mill and other engraving, punching, dividing, and ruling rollers, either for hand or machine engraving, and an improved mandril used in mill, eccentric, and other machinery employed in engraving rollers for printing and embossing calicoes and other fabrics.
2177. William Frederick Spittle, Birmingham—A new or improved spindle for braiding and plaiting machines.
2179. Carl Heinrich Schroder, Altona, Holstein—An improved rotary engine, to be worked by steam or other elastic fluid, which invention is also applicable as a rotary pump for raising and forcing liquids.
2181. Friedrich Heinrich Rudolf Scheller, Vienna—An improvement in the manufacture of illuminating gas.

INVENTION WITH COMPLETE SPECIFICATION FILED.

2131. Constant Jouffroy Duméry, Paris—Improvements in apparatus for counting, registering, and indicating the distance travelled by vehicles, and the speed and time of travelling.—11th September, 1856.

WEEKLY LIST OF PATENTS SEALED.

Sealed September 26th, 1856.

719. William Armand Gilbee.
727. William Clayton.
733. Richard Durant Cumming.
734. Bonnet Frédéric Brunel.
736. William Ball.
737. Allen Levinston Hill.
744. Alfred Daniel.
746. John Charritie and William Smith.
753. Charles Wye Williams.
760. Herbert Newton Penrice.
769. James Hicks.
778. George Thomas Smith and Joel Watts.
802. Alfred Vincent Newton.
818. Charles William Ramie.
820. Joseph Gilbert Martien.
834. Henry Craigie.
844. William Coles Fuller.
858. Richard Chrimes.
867. Thomas Williams Makin and John Barnsley.
924. John Marsh.
1152. Hugh Greaves.
1202. John Cope.
1436. Walter Henry Tucker.
1446. George Pye.
1484. Leonard Bower.
1582. Thomas Smith.
1601. William Youtman.
1781. Samuel Yeadon and George Chapman.

Sealed September 30th, 1856.

780. Joseph Bentley.
792. Richard Roberts.
793. Peter Mc Gregor and Thomas Marquis.
794. James Smith Cottrill.
796. George Bell Galloway.
808. Thomas White.
822. James Hogg and John Napier.
825. James Webster.
829. Henry Thomas Sturley.
831. William Porter Maddison.
838. John Leigh.
870. Peter Armand le Comte de Fontainemoreau.
889. Samuel Cunliffe Lister.
891. Samuel Cunliffe Lister.
894. Alfred Vincent Newton.
920. John Skirrow Wright.
921. George Lurig.
959. Augustin Simeon Vimont.
994. Charles Swift and John James Derham.
997. Robt. Lakin, John Thompson, Edward Gerrard Fitton, and Frederick Alexander Fitton.
1195. William Edward Newton.
1291. Robert Jobson.
1357. Alfred Vincent Newton.
1444. Guilford Lindsay Molesworth.
1594. James Horsfall.
1667. GeorgeTomlinsonBousfield.
1757. GeorgeTomlinsonBousfield.
1854. John Yuil Borland.

PATENTS ON WHICH THE THIRD YEAR'S STAMP DUTY HAS BEEN PAID.

September 23rd.

2197. James Leetch.

September 24th.

2293. Jas. Bullough, John Walmsley, and David Whittaker.

September 25th.

2210. Joseph Ellisdon.
2258. William Henry Wilding.

September 26th.

2277. Samuel Leake Worth and Agmond Dishin Vesey Canavan.
2312. Henry Clayton.
2319. Frederick Warner and John Shotton.

September 27th.

2216. William Prior Sharp, John Hill, jun., and William Martin.